



FIG. 1 —Compression of abdominal aorta.



FIG. 2.—Compression of abdominal aorta; finger upon common femoral to ascertain arrest of blood current.

ANNALS OF SURGERY.

A MODE OF CONTROLLING THE CIRCULATION THROUGH THE ABDOMINAL AORTA.

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THE following mode of controlling the circulation through the abdominal aorta has been sufficiently tested by the author to warrant its publication.

As the patient lies on his back on the table, the assistant, facing patient's feet, stands on the left side of the table in a line with patient's umbilicus. He then places his closed right hand upon the patient's abdomen a little to the left of the middle line, the knuckles of the index finger just touching the upper border of the umbilicus, so that the whole shut hand will embrace about three inches of the distal extremity of the aorta above its bifurcation. The assistant then standing upon his left foot, his right foot crossing his left and resting upon the toes of the right—an attitude commonly assumed by public speakers—leans upon his right hand and thereby exercises the necessary amount of pressure. With the index finger of the assistant's left hand, the weight necessary for the purpose can easily be estimated by the effect produced upon the flow of blood through the common femoral at the brim of the pelvis. Whenever the flow of blood through the femorals is absolutely arrested the abdominal aorta is sufficiently controlled, and no further weight ought to be applied.

The weight exercised can be varied at will by increasing or decreasing the angle which the assistant's body makes with the floor. The position which the assistant assumes relatively to the patient is represented in the accompanying photographs.

As the abdominal aorta sometimes bifurcates higher than usual, before the operation is commenced a trial of the effect of the pressure at the part selected ought to be made, testing the result of pressure on *both* femorals. When both are equally controlled the bifurcation occurs below the point pressed on; when only one is controlled the hand requires to be placed on a more proximal part.

As there is no direct muscular effort required in maintaining the pressure further than the preservation of the equilibrium, the position can be maintained by the assistant without undue strain on his part, and without shifting his hand for at least half an hour, a time amply sufficient for the performance of most operations requiring the control of the circulation through the abdominal aorta.

In order to eliminate the personal equation, the author has usually selected a different person each time he has had occasion to control the abdominal aorta, and while there were slight differences between the various persons chosen, the object was always efficiently secured. The majority of those who exercised pressure in this way said, at the end of the operation, that they could have further maintained the pressure for a considerable time.

Among the cases in the author's practice in which the abdominal aorta was thus controlled were disarticulations at the hip joint, amputations at the upper third of the femur, large pelvic vascular tumors, intra-pelvic hæmorrhage, and traumatic hæmorrhage from the external iliacs; in all the control of the circulation was absolute. In the amputations of the hip none of the patients lost from the proximal side of the cut vessels more than a couple of ounces of blood, and that only from the oozing of the general surface; there was none from the main vessels. In amputations also, after the main vessels were ligatured, the assistant could, by a slight momentary relaxation of the pressure,

"show" the position of any hidden or retracted vessel without altering the position of the hand relatively to the aorta. This form of pressure would be equally valuable for uterine hæmorrhage.

A priori one might fear that pressure might be exerted on some of the coils of the small intestine and thereby produce injury. As far as one can judge this did not result. Only on two occasions did the patient complain, for a few hours after the operation, of a sensation of pain over the part pressed on, which was only elicited on interrogation. All the others, though specifically asked, said they had no pain.

There is one point to be guarded against. Should the patient vomit or cough violently the pressure would require to be increased, as otherwise the muscles in the abdominal walls are apt, during the strain, to elevate the hand from the aorta. The operation during vomiting might be postponed for a few minutes while local pressure is applied.

The author has applied this method in his practice for over fifteen years, and has found it simple, always ready, easily applied and efficient.